

PCT

To:

see form PCT/ISA/220

WRITTEN OPINION OF THE
INTERNATIONAL SEARCHING AUTHORITY
(PCT Rule 43bis.1)

Date of mailing
(day/month/year) see form PCT/ISA/210 (second sheet)

Applicant's or agent's file reference
see form PCT/ISA/220

FOR FURTHER ACTION
See paragraph 2 below

International application No.
PCT/EP2005/051259

International filing date (day/month/year)
17.03.2005

Priority date (day/month/year)
20.03.2004

International Patent Classification (IPC) or both national classification and IPC
G02F1/1335

Applicant
HEWLETT-PACKARD DEVELOPMENT COMPANY L.P.

1. This opinion contains indications relating to the following items:

- ☒ Box No. I Basis of the opinion
- ☐ Box No. II Priority
- ☐ Box No. III Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- ☐ Box No. IV Lack of unity of invention
- ☒ Box No. V Reasoned statement under Rule 43bis.1(a)(i) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- ☐ Box No. VI Certain documents cited
- ☐ Box No. VII Certain defects in the international application
- ☒ Box No. VIII Certain observations on the international application

2. **FURTHER ACTION**

If a demand for international preliminary examination is made, this opinion will usually be considered to be a written opinion of the International Preliminary Examining Authority ("IPEA"). However, this does not apply where the applicant chooses an Authority other than this one to be the IPEA and the chosen IPEA has notified the International Bureau under Rule 66.1bis(b) that written opinions of this International Searching Authority will not be so considered.

If this opinion is, as provided above, considered to be a written opinion of the IPEA, the applicant is invited to submit to the IPEA a written reply together, where appropriate, with amendments, before the expiration of three months from the date of mailing of Form PCT/ISA/220 or before the expiration of 22 months from the priority date, whichever expires later.

For further options, see Form PCT/ISA/220.

3. For further details, see notes to Form PCT/ISA/220.

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Box No. I Basis of the opinion

1. With regard to the **language**, this opinion has been established on the basis of the international application in the language in which it was filed, unless otherwise indicated under this item.
 - ☐ This opinion has been established on the basis of a translation from the original language into the following language , which is the language of a translation furnished for the purposes of international search (under Rules 12.3 and 23.1(b)).
2. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application and necessary to the claimed invention, this opinion has been established on the basis of:
 - a. type of material:
 - ☐ a sequence listing
 - ☐ table(s) related to the sequence listing
 - b. format of material:
 - ☐ in written format
 - ☐ in computer readable form
 - c. time of filing/furnishing:
 - ☐ contained in the international application as filed.
 - ☐ filed together with the international application in computer readable form.
 - ☐ furnished subsequently to this Authority for the purposes of search.
3. ☐ In addition, in the case that more than one version or copy of a sequence listing and/or table relating thereto has been filed or furnished, the required statements that the information in the subsequent or additional copies is identical to that in the application as filed or does not go beyond the application as filed, as appropriate, were furnished.
4. Additional comments:

Box No. V Reasoned statement under Rule 43b/s.1(a)(I) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Yes: Claims	3, 6-8, 10-13, 15-16
	No: Claims	1,2, 4, 5, 9, 14
Inventive step (IS)	Yes: Claims	11, 12, 13, 15, 16
	No: Claims	3, 6-8, 10
Industrial applicability (IA)	Yes: Claims	1-16
	No: Claims	

2. Citations and explanations

see separate sheet

Box No. VIII Certain observations on the international application

The following observations on the clarity of the claims, description, and drawings or on the question whether the claims are fully supported by the description, are made:

see separate sheet

Re Item V

**Reasoned statement with regard to novelty, inventive step or industrial applicability;
citations and explanations supporting such statement**

1. Cited documents

The following documents (D) are referred to in this communication; the numbering will be adhered to in the rest of the procedure:

- D1: PATENT ABSTRACTS OF JAPAN vol. 014, no. 195 (P-1039), 20 April 1990 (1990-04-20) -& JP 02 039086 A (KYOCERA CORP), 8 February 1990 (1990-02-08)
D2: HOCHBAUM A ET AL: "51.3: Cholesteric Color Filters: optical Characteristics, Light Recycling, and Brightness Enhancement" PROCEEDINGS OF THE SID, 18 May 1999 (1999-05-18), XP007008990 SAN JOSE, CALIFORNIA, USA
D3: EP-A-1 088 877 (CANON KABUSHIKI KAISHA) 4 April 2001 (2001-04-04)

2. Novelty

The present application does not meet the requirements of Article 33(2) PCT, because the subject-matter of claims 1, 2, 4, 5, 9 and 14 is not new.

2.1 Claim 1

Document D1 discloses:

a colour display device comprising:
a first (11) and a second (12) display substrates being opposed to each other at distance and with an electro-optic material between them; each of the substrates having electrodes on their inner surface, these electrodes overlapping to define pixels;
a set of first colour filters (17a) on the first substrate and a set of second colour filters (17b) on the second substrate;
whereby the colour of light transmitted through a pixel is determined by the light transmitted by both the first and the second colour filters that intersect at that pixel (Abstract and Fig.2).

D1 discloses all the technical features of independent claim 1 whose subject-matter lacks therefore novelty.

2.2 Claims 2, 4, 5, 9 and 14

The filters disclosed in D1 have repeating stripes of colours cyan (7c), yellow (7y) and magenta (7m), which leads to pixels of the colour red, blue and green. The three colours cyan, magenta and yellow being complementary colours produce white light when they are mixed. Furthermore, the electrodes (13) on the first substrate are orthogonal to those (14) on the second substrate. The subject-matter of claims 2, 4, 5, 9 and 14 therefore also lacks novelty.

2.3 Claims 3, 6-8, 10-13 and 15-16

The subject-matter of these claims seems to be novel over the cited prior art.

3. Inventive Step

The present application does not meet the requirements of Article 33(2) PCT, because the subject-matter of claims 3, 6-8 and 10 does not involve an inventive step.

3.1 Claim 10

As already mentioned at point 2.1, D1 discloses a device as claimed in claim 1. This document therefore implicitly discloses the step of having two substrates with corresponding electrodes and colour filters on them, assembling them, sealing their periphery and filling the cell. The only difference between the claimed method and that disclosed in D1 is that the substrates both include auxiliary electrodes to improve the conductivity of the transparent electrodes (busbar).

This kind of auxiliary electrodes are disclosed in D3 (parag. [0037]). Using them in the device of D1 would be straight forward for the skilled person trying to improve the uniformity of the display device. The subject-matter of this claims therefore lacks an inventive step.

3.2 Claim 3

When trying to simplify the manufacturing process of the device of D1, the skilled

person would consider using only two colours on each substrate, as this would lead to a device transmitting the three primary colours. The choice of yellow and cyan on one side and yellow and magenta on the other is one of the possible combination that he would consider.

3.3 Claims 6-7

Reflecting filters used between a backlight and a display are known from D2 ("Principles of operation" and Fig.1). The use of a backlight with such filters in the device of D1 would be obvious when trying to save light from the backlight.

3.4 Claim 8

Auxiliary electrodes parallel to the transparent electrodes used to improve the electrical conductivity of the electrodes of a passive matrix are known from D3 (parag. [0037]). Using such auxiliary electrodes (busbars) in the device of D1 does not involve any inventive activity.

3.5 Claim 11-13 and 15-16

Claims 11 and 12 relates to manufacturing methods of a colour liquid crystal display device in which the colour filters are used as a mask to design the transparent electrodes. The manufactured device comprises two colour filters, one on each substrate and the colour of the light transmitted through a pixel is determined by both colour filters. As, in D1, the colour filter stripes of the first substrate are parallel to those on the second substrate, the skilled person would not be guided to use the colour filters as a mask for the electrodes.

Claim 15 relates to a colour liquid crystal display device in which colour filters are provided on both substrates. These colour filters have the same size and shape as the elongated electrodes which are perpendicular to each other. In D1, the electrodes on one substrate are parallel to the colour filters, on the other substrate one filter covers two electrodes. The skilled person would find no hint in the prior art to use colour filters having the same size and shape as the electrodes.

The subject-matter of claims 11, 12 and 15 seems therefore to fulfil the requirements of inventiveness expressed at Article 33(2) PCT. Due to the fact that it depends on claim 12 (resp. 15), claim 13 (resp. 16) also fulfils this requirement.

Re Item VIII.

The application does not meet the requirements of Article 6 PCT, because the claims are not clear.

1. Technical term *register*

The terms *to register*, *being in register with* or *being in registration with* are linguistically unclear. It is not possible to interpret them using their usual meaning and to know which technical features are meant with these terms. According to the description (see e.g. p.13, l.9-12) it seems that one interpretation of these terms could be that the colour filters are aligned with the electrodes and have the same size and shape as them. Nevertheless, in order to keep the broadest meaning of the claims, the corresponding technical features have been disregarded for the evaluation of the novelty and inventiveness of the subject-matter of the claims.

2. Claims 14 and 15

Those claims, which have been drafted as independent claims, contain both all the features of claim 1. They should therefore have been drafted as dependent claims as required at Rule 6.4(a) PCT.